INTECH
open science | open minds

OPEN ACCESS
ARTICLE

International Journal of Engineering Business Management

Application of Creativity Techniques in the Creation of Organizational Strategies

Regular Paper

Alireza Aslani[1,*], Marja Naaranoja[1] and Tauno Kekale[2]

1 Department of Industrial Management, University of Vaasa, Finland
2 Vaasa University of Applied Sciences (VAMK), Vaasa, Finland
* Corresponding author E-mail: alireza.aslani@uwasa.fi

Received 04 June 2012; Accepted 06 July 2012

DOI : 10.5772/51359

Abstract The majority of studies in the field of organizational strategies have concentrated on strategy formulation, distinct from strategy implementation. Disunion of these two processes often leads to disappointing results in the implementation of strategy. In such a condition, the creation of a suitable strategy in a way that could resolve the divergence of formulation from implementation is suggested by researchers. This means that the implementers of a strategy turn into the formulators. Therefore, presenting creative ideas and solutions is encouraged between related organizational staff at different levels. Noting that the possibility of emerging creative ideas in organizational meetings between persons from different organizational levels is low, fostering creativity and innovation techniques can be an ideal solution for successful group meetings. In this paper, after introducing the effective criteria that should be considered in the creation of collective action strategies in organizations, the suitable techniques for fostering creativity in this kind of meeting will be ranked based on the Fuzzy MADM approach.

Keywords Formulation of strategy; Implementation of strategy, Action strategy, Creativity and innovative techniques, Fuzzy approach

1. Introduction

The business theory of successful competition or effective performance in an industry or market that is placed in a conceptual frame is called "strategy" [1]. Although the literature on strategy is rich, the majority of studies on the organizational strategy typically concentrate on the determination of the desired outcomes and how to achieve them, analysis of organizational environment and resources, allocation of resources, and design of organizational structures and control systems proportional to the centralized strategy [2].

In view of this, the planning of organization activities and performance is considered to be an achievable process and strategies are supposed to be equal to the rational decision making process. Therefore, strategic management is based on the distinctive axes of formulation, implementation, evaluation and control, which is implemented consecutively [3]. This distinction has occurred via a hierarchical division of workforces in many organizations, meaning that some personnel (top managers or staff of planning departments) develop a strategy, while some (middle managers or operational managers) undertake the execution of that strategy. The result of this separation is a distinction between thinking

and action that often leads to failure. This failure has been estimated to be up to 90% in the strategic programmes of organizations [4].

In analysing the causes of this failure some researchers have considered bad execution of strategies and not bad strategy in itself [5]. They classify the limitations of strategy execution into a number of barriers such as barriers of resource allocation, management commitment, non-alignment of workforces and strategy communication [4]. The interesting point in this research is the confirmation and even verification of the emphasis that researchers place on the separation of strategy formulation from their implementation. They consider formulation of strategy as a responsibility of top managers and its implementation as a responsibility of personnel in different departments in the organization [6].

According to the investigations some challenges appear from drawing a borderline between formulation and implementation of strategy [8]. They can be classified using the two dimensions of positioning and psychology [7]. The first dimension considers environmental uncertainty and its relation to strategy making. Also, in the second dimension, the psychological consequences of this separation, such as decreasing the motivation of strategy implementers because of lack of presence in the phase of strategy formulation, are discussed. So, making a strategy is accurate and thorough design in addition to intuition and innovative learning [8].

This research starts with an overview of the literature of strategy creation in different conditions. Then, the role of collective decision making in uncertain situations is reviewed as a next step. Finally, with introducing the effective criteria that should be considered in the creation of collective action strategies, suitable techniques for fostering creativity in this kind of meeting will be ranked based on the Fuzzy MADM approach.

2. Theoretical Framework

Research shows that when a significant change takes place in a strategic path, it is rarely because of the efforts of official planners and might not even take place in the offices of top managers [9]. In other word, organization's managers initiate strategic planning wrongly in a specific condition that strategic decision making necessitates a collective process for strategy[33]. Therefore, they wrongly initiate developing a strategy in the designing and planning offices, and communicate their plans in a bureaucratic and hierarchical way to the lower levels of the organization [10]. In contrast, creation of strategy based on collective decision making would be useful in these situations.

Researchers such as Henry Mintzberg even describe this situation with average environmental uncertainty that occur in conditions of extra complexity and low domain of variation. It can be a most suitable choice for formulation and implementation of strategy in professional organizations which work in an environment with high uncertainty conditions, or in organizations which like staff participation for some reasons such as decentralization, equally, due to political reasons, they need a collective agreement for insuring success in the execution of their developed strategy. Finally, it would be a strategy for organizations that face a completely new and sudden situation [9].

Based on the contingency theory of strategy uncertainty, at different levels of environmental uncertainty, strategy falls within one of the four categories mentioned below (figure 1). The contingency theory describes the relation between specific dimensions of the environment and the specific characteristics of an organization: more stability of external environment means that the internal structure is more official in direct proportion. The theory was later extended to strategy making such as more stable environments advocate more planning [3].

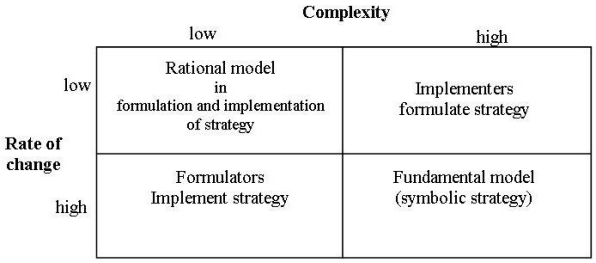

Figure 1. Four categories of contingency theory

According to figure 1, the uncertainty is evaluated using the two dimensions of complexity and rate of change [3]. If a strategist is faced with a stable and complex environment, he/she probably experiences a type of middle uncertainty. In this condition, the pressure that is felt is due to lack of capacity in identifying the sensitive aspects of the current situation. This situation occurs more often in specialized organizations because the environment demands a complex reaction that establishes a pressure on the strategist in understanding what he/she does and obliges trust in others. The identified confidence is due to the lack of understanding of the current situation of the organization that exists in high level managers or planning offices. Under these conditions a collective type of strategy is suggested [9]. A collective strategy is one that engages those who are called "the implementer of strategy" in the rational model. Therefore, group participation of staff in strategic decisions will be an effective solution when the environment is complex due to the vast amount of information available for the organization [33].

2.1 Strategic thinking in uncertainty conditions

The studies show that when organizations face dynamic and complex decision making environments, they may involve high levels of uncertainty [11]. Such uncertainty may lead to difficulties within decision making processes, especially at strategic levels. So, the suggested approach in this condition is taking decisions based on strategic thinking [12]. In other words, in cases of high uncertainty, it is difficult to expect the success of some patterns like strategic planning, because strategic planning is a lone planning process that lacks thinking and insight [8]. Based on strategic thinking, the successful strategy of today's organizations is a creative, opportunity making and effective one. In other words, in dynamic and uncertain environments strategies are defined by expanding a range of recognized, alternative options/choices available for decision makers. Therefore, the creation of collective strategy is typically related to the creation of innovative strategies. On the other hand, utilization of creativity and innovation for problem solving will be a predominant approach in the organization. In this approach, when the strategic problems of the organization are under consideration, a set of groups related to the subject is effective in problem solving. Since decisions are usually made in a restricted environment, the importance of group decision making can be interpreted. This refers to the mental characteristics of humans, so that in searching for solutions to a problem the activity of the human mind decreases and stops after finding the first two or three solutions. Thus, the use of different views (group decision making) is an effective method for extending the decision space [13]. Keeping this in mind, the decision makers can engage with the subject from other viewpoints, helping them to add new choices to their decision space. This brings more choices of higher quality and extends the decision space leading to the creation of better and quicker solutions and therefore, creating a competitive advantage for the organization [14].

However, in the work meetings consisting of experts, top managers etc. it is difficult to expect the emergence of creative and new ideas [15]. Within a collection of individuals in a meeting, there are always collective and organizational barriers to creativity and innovation [33].

This subject can be considered in such a way that in ordinary groups, a series of limitations may hinder the effects of creative ideas [16]. In other words, there is always the possibility of following an idea at the cost of disregarding the other ideas in ordinary groups; or, the executive body members do not like to present their ideas for of fear ridicule by other members. Also, the lower ranked managers and supervisors may not have willingness to state their ideas before a higher ranked group [17] [33].

Regarding these barriers some methods can be considered for improving the creative solutions. For example, the individuals and organizations must learn to improve their intuitive abilities or they must emphasize a creativity fostering culture [18]. The researchers of this study proposed a framework for improving the role of creativity and innovation in strategic decision making that emphasized the importance of utilization of techniques to foster the emergence of creative and innovative ideas [19]. Due to the predicted limitations in ordinary group decision making, utilization of these techniques can improve the creativity, imagination and ideation of participants. Some of the most important of these techniques are brainstorming; TRIZ; Delphi; role-playing; Schamper adaptive form; experience knapsack; fish bone chart; parallel thinking; king of mountain; analogies and metaphors; mind mapping, etc. There is a meaningful correlation in utilization of these techniques and emergence of successful strategic ideas [19]. Our study indicates more than 120 creativity and innovation techniques which are used in all stages of creative problem solving (CPS) and decision making [15].

By using innovation and creativity techniques, various creative strategies and solutions will emerge that must be selected against some predefined criteria. In this way, an important point is to select the most suitable techniques to implement in the diffusion of collective strategy decision making. Due to the structure of strategy formulation, the techniques must be selected against some independent criteria as follows [8]:

*The application of the technique must be solely related to creativity and innovation.
*They must be applicable in group meetings.
*Each technique must have a substantial relation to the emergence of strategic ideas.
*Each technique must be taken into consideration according to the level of creativity, conformity to the goals and limitations of the organization, and the potential impact of the strategy on the market, competitors and the process.

Due to these limitations and by using the conjunctive satisfying method (MADM), seven techniques were recognized to assist in implementing creation of a collective strategy: Mind Mapping (MM); Brain Storming (BS); Lateral Thinking (LT); Story Boarding (SB); Synectics (SY); TKJ Technique (TKJ) and Scenario Building (SB) [7][19]..

Each technique can facilitate the level of emergence creativity and innovation to fit their application and nature. On the other hand, they are different from the integration perspective, participation of members, etc. So, some of them can be a priority for application. This means that there should be some criteria that show the success level of each technique. These criteria can be

identified and detected from the literature in four different fields (figure 2).

Figure 2. Fields of study for identifying criteria

2.2 Introduction to effective factors in order to create successful collective strategy

Creation of collective strategy is related to high complexity and low rate of change in uncertainty conditions of environment. In fact, volume of information that is processable and analysable provides the participation of related staffs in strategic decision-making. From the epistemology viewpoint, strategy is defined as a combination of art and science. The science of strategy comprises sets of methods, patterns and theories which are the result of scientists and researchers understanding the competent behaviour of top managers [20]. Also, the art of strategy deals with an intuitive vision of the strategy process which is impossible to generalize. In other words, the science of strategy structures strategist's mind and the art of strategy contributes to bloom the trategist's mind [21].

	Name of Attributes
1	Considering environment complexities
2	Considering environment changes
3	Considering obtaining the environment information and environment analysis
4	Ability to forecast the future
5	Considering environment opportunities
6	Emphasis on creation of hypothesis
7	Emphasis on past, present and futures events
8	Ability to establish the relation between divergent and convergent thinking
9	Ability to create criteria of suitability solutions
10	Ability to provide feasible solutions
11	Ability to provide significant outputs
12	Ability to attract the participation of members

Table 1. The effective criteria of collective strategy

Since the creation of collective strategy implies reducing and even removing the distances between formulation (thought) and implementation (executive), to create effective and appropriate strategy, a combination of art and science of strategy is advised (action strategy). Put simply, the action strategy accomplishes out of planning offices and is beyond the advised contents of strategy. Therefore, strategy restores its artistic shape again.

According to the research an action strategy is not for the creation of opportunity and future vision, but is used for solving organizational problems and right decision making [22]. The researchers identified twelve criteria that have an effect on the success creation of action strategies (table 1) [19].

3. Research Methodology

3.1 Research type and strategy

This article is categorized as research and development (R&D) research in view of its purpose, and is also description research [23]. The methodology framework of this research is shown in figure 3. The main focus is to answer the question below:

"Due to the role of creativity and innovation techniques on the development of new ideas, which of the creativity techniques are the priority for application in collective strategic decision making?"

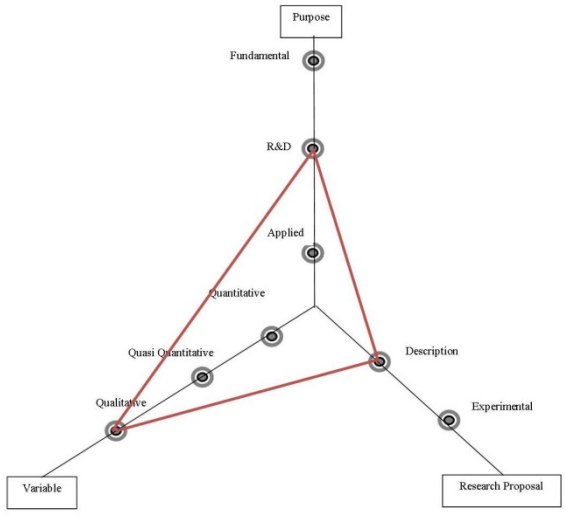

Figure 3. Methodology framework

This research is objective research in view of epistemology and process-based research from the ontological perspective. So, it is sorted as survey research (figure 4) [24].

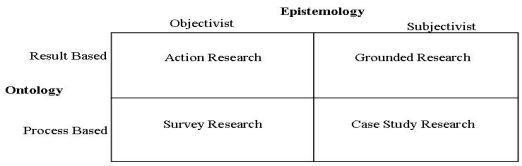

Figure 4. Research strategy

3.2 Survey design

Multi-attribute decision models (MADM) were implemented to evaluate, compare and study the alternatives in this research. So, a decision matrix was defined in which the alternatives are creativity and innovation techniques, and the attributions are the main effective criteria in the creation of successful strategies.

To rank the creativity and innovation techniques in order to use in the creation of collective strategy, two surveys were conducted for collecting expert opinions. The first questionnaire including 24 questions designed to weight the criteria. The second is related to the assessment of the ability of each technique in each criterion. Each question was designed based on closed-ended questions and the Likert scale [25]. Respondents were asked to indicate their perceptions by using a seven-grade scale (table 2). The validity of the measurement instrument was tested in two stages. First, some problems with the questionnaires were revised on the advice of three professors of research methods in social science after initial designing. Then, the questionnaires were pre-tested by five responders and ambiguities were removed. Therefore, the validity of questionnaires was proved by the content method [34]. Also, the reliability of the questions was proved by using the Cronbach's Alpha method. SPSS software was used to calculate the Cronbach's Alpha which was 0.78. This shows that the reliability of questions is good [24].

Scale	Description
1	Extremely low
2	Very low
3	Low
4	Medium
5	High
6	Very high
7	Extremely high

Table 2. Survey scale

The research sample was selected from a population of company experts and managers of Iranian Industries. The companies work as manufacturing and services firms. The potential respondents were top managers, executive managers, supervisors and experts in strategic planning and related departments. So, four different and medium sized firms were selected (two manufacturing and two services) and 168 questionnaires were distributed randomly. The total number of fully completed questionnaires was 102 (return rate of questionnaires: 61%). According to the used data analysis method (Fuzzy method), these samplings are sufficient to have verified results [26].

3.3 Data analysis

The judgments of decision makers vary in form and depth. While one may not indicate his/her preferences at all, another may represent his/her preference through the form of attribute or alternative. Also, the degree of judgment skill also varies. To meet this varied situational judgment, the researchers used the multi-attribute decision making method (MADM).

There are two major MADM approaches: non-compensatory and compensatory models [27]. Non-compensatory models do not permit trade-offs between attributes. In other words, a disadvantageous or unfavourable value in one attribute cannot be offset by an advantageous or favourable value in another attribute. This approach was employed for selecting the seven creativity techniques for creation of strategy.

On the other hand, compensatory models permit trade-offs between attributes. A change in one attribute could be offset by opposing changes in other attributes [32]. This mode can be divided into three subgroups: the scoring model, the compromising model and the concordance model [27]. So, the alternative which has the highest score is selected. Simple additive weighting (SAW) is one of the main modelsthat belongs toscoring models. The compromising model selects an alternative which is closest to the idea solution. TOPSIS, LINAMP and non-metric MDS belong to this category. In this research, SAW and TOPSIS methods were used to rank the techniques [28].

An alternative in MADM is usually prescribed by two kinds of attributes: quantitative and qualitative. In this research, all of the main effective criteria (attributes) are qualitative. Three kinds of measurement scales can be employed for measurement of quantities: ordinal, interval and ration. The transformation of qualitative attributes into a ratio scale is extremely hard [28]. One of the common ways for conversion of a qualitative attribute into an interval scale uses the Fuzzy approach. This approach is the one of the best methods for qualitative alternatives or the uncertainty situation. A fuzzy set is defined as a class of objects in which there is no sharp boundary between two objects, one belonging to the class and one not. Fuzzy numbers are possibility distribution functions where at least one value must assume a membership of 1.0. In this survey the Triangular Fuzzy Number (TFN) was used [27] which is characterized by the threefold s a1, a2, a3.

For example in medium linguistic values, TFN is (0.3, 0.5 and 0.7). The linguistic values in this survey scale (Likert with seven alternatives) are coded by fuzzy sets (TFN) [30].

Figure 5 illustrates the framework of our research analysis.

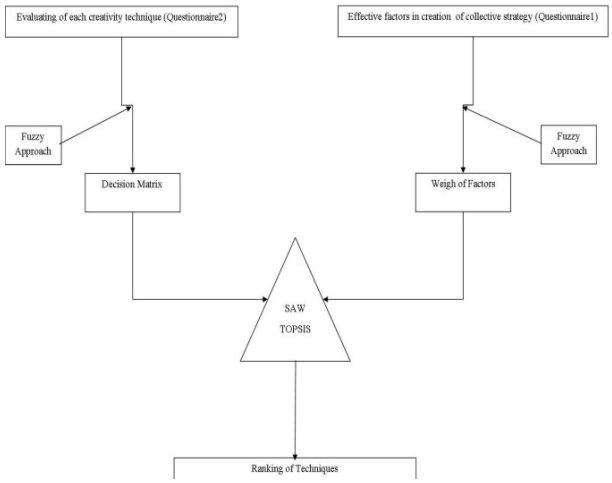

Figure 5. Main framework of data analysis

3.4 Fuzzification and defuzzification of decision matrix

By using fuzzy extension principle , algebraic operations can be calculated for the triangular fuzzy number [29].

$$(L1, M1, U1)+ (L2, M2, U2) = (L1+L2, M1+M2, U1+U2) \quad (1)$$

$$(L1, M1, U1)- (L2, M2, U2) = (L1-L2, M1-M2, U1- U2) \quad (2)$$

$$(L1, M1, U1)* (L2, M2, U2) = (L1L2, M1M2, U1U2) \quad (3)$$

The average of each fuzzy number is calculated based on the following equation. [30].

$$Eij= (Eij1+Eij2+ \dots +Eijm)/m \quad (4)$$

In above equation Eij is the total evaluation of technique i insight of factor j for m response (m=102). This equation is used for each parameter in the triangular fuzzy number. Next, the weight of each factor for each technique was calculated for the defuzzification of each triangular fuzzy number [31]:

$$M = a1 + \frac{(a3-a1)+(a2-a1)}{3} \quad (5)$$

According to the explained method the weight of each criterion extracted from questionnaire num1 and after normalizing is based on table 3.

After normalizing the decision matrix, SAW and TOPSIS methods were computed [25]. Table 4 shows the ranking of creativity techniques based on these two methods.

Priority	Name of Attributes	Normalize weight
1	Considering environment opportunities	0.096284
2	Ability to forecast the future	0.092423
3	Considering environment changes	0.089768
4	Considering obtaining the environment information and environment analysis	0.089286
5	Ability to provide feasible solution	0.084701
6	Considering environment complexities	0.082529
7	Ability to provide significant outputs	0.082288
8	Emphasis on past, present and futures events	0.080116
9	Ability to establish relation between divergent and convergent thinking	0.07722
10	Ability to attract the participation of members	0.076496
11	Ability to create criteria of suitability solutions	0.075531
12	Emphasis on creation of hypothesis	0.073359
Sum		1

Table 3. Weight of criteria

Rank	SAW	TOPSIS
1	Scenario building	Scenario building
2	TKJ Technique	TKJ Technique
3	Mind Mapping	Brain Storming
4	Brain Storming	Mind Mapping
5	Lateral Thinking	Synectics
6	Synectics	Lateral Thinking
7	Story Boarding	Story Boarding

Table 4. Ranking of techniques

By using the aggregate method, the final ranking of techniques is as follows (table5).

Rank	Creativity technique for creation of collective strategy
1	Scenario Building
2	TKJ Technique
3	Mind Mapping and Brain Storming
4	Lateral Thinking and Synectics
5	Story Boarding

Table 5. Final ranking

4. Conclusion

This study ranked the best creativity techniques with regard to the creation of collective strategy (table 5). The first preference technique is scenario building. Reviewing the literature on this technique indicates that its application could be in the creation of strategy in collective conditions such as for military leaders during

war who use scenario for assessing the success or failure of their strategies. According to the research, there is a close relationship between scenario and making strategy. To quote Porter: "Scenario is a weapon in the strategist's arsenal." Only a few managers, experts or specialists have the opportunity of thinking about the future. Scenario building often is used for formulation of strategy for various possible circumstances of the future, so it can be utilized for the creation of collective strategy too (action strategy).

The second ranked technique is TKJ. This technique has advantageous elements when used for finding solutions for complicated problems.

In summary, in specific conditions (related to the uncertainty of the environment) strategic decision making requires creative solutions. This situation proscribes the ability of correct decision making. Meanwhile, due to the restrictions of usual collective meetings (emerging creative ideas), it is not only the structure of ideas that can become creative and innovative through the use of the appropriate techniques, acceleration of implementation of this action strategy can also take place.

There are several subjects and case studies that are related to this study that can be investigated for further research. For instance, case studies about contingency theory and its relation to the uncertainty environment, considering the success or failure of the creation of collective strategy in different organizations, and the study of the main barriers to the implementation of creativity in decision making are examples for further research.

5. References

[1] Porter M.E. & Kramer M.R., 2006, Strategy and Society: The Link between Competitive Advantage and Corporate Social Responsibility, Harvard Business Review, December 2006, pp. 78-92.

[2] Flood P.C., 2000, Managing Strategy Implementation, an Organizational Behavior Perspective. New York. McGraw-Hill.

[3] Hatch M.J., 2006, Organization theory: modern, symbolic, and postmodern perspectives, Oxford Unit Press:UK.

[4] Kaplan R. S., & Norton D. P., 2004, Measuring the strategic readiness of intangible assets. Harvard Business Review, 82.

[5] Beldek U., 2007, Strategy creation, decomposition and distribution in particle navigation. Information Sciences, 177.

[6] Kaplan R. S., & Norton D. P., 2004, Strategy maps: Converting intangible assets into tangible outcomes. Boston: Harvard Business School Press.

[7] Mohaghar A., Aslani A., 2009, Presenting a Framework to Develop the Role of Innovation and Creativity in Organizational Strategic Decision Making in Environmental Uncertainty, 2th International Conference on Creatology, TRIZ & Innovation Management & Engineering (ICCTIME), code: 1330, Tehran.

[8] Kekale T., Aslani A., 2010, Identification and Ranking of Related Creativity and Innovation Techniques with Creation of Collective Strategy by Using MADM Models Based on Fuzzy Approach, 8th International Management Conference, CIVILICA, Tehran.

[9] Mintzberg H., 1998, Strategy Safari: a guided tour through the wilds of strategic management. Englewood Cliffs, NJ: Prentice Hall

[10] Brady M.K., Cronin J.J., Gavin J.F., 2008, Strategies to offset performance failures: The role of brand equity, Journal of Retailing Vol 84, Issue 2, 2008.

[11] Bednar P.M., Welch C.H., 2006, Structuring uncertainty: sponsoring innovation and creativity, the IFIP WG8.3 International Conference on Creativity and Innovation in Decision Making and Decision Support, 2006, London, UK.

[12] Hamel G., 2007, the Future of Management. Harvard Business Press, Boston, US

[13] Proctor, T., 2005, Creative Problem Solving For Managers: Oxon, Routledge.

[14] Joachimsthaler E., 2007, Hidden in Plain Sight: How to Find and Execute Your Company's Next Big Growth Strategy, Harvard Business School Press. Boston, US.

[15] Hyginz J.M., 2002, 101 creative problem solving techniques, New Management Pub. Co. US.

[16] Aghaei T., 2008, Creativity and Innovation in Human and Organization, Terme, Tehran.

[17] Coade N., 1997, Be Creative: The Toolkit for Business Success, Thomson Business Press.OR.UK.

[18] Clegg B., 2001, Creativity and Innovation for Managers. Butterworth Heinemann, New York.

[19] Mohaghar A., Aslani A., 2009, Identification and Rank of Effective Elements to Success in Creation of Strategy, 7th International management conference (IMC), code: 220, Tehran.

[20] Ghaffariyan V., 2008, Strategy- revolution of 360 degree. Fara. Tehran.

[21] Mulcaster W.R., 2009, Three Strategic Frameworks, Business Strategy Series, Vol 10, No1, 2009.

[22] Lye K., 2009, HOW TO...turn strategy into action, People Management, Vol. 15, Issue 1 Business Source Premier (EBSCO), 2009.

[23] Sarmad Z., 2009, The Research Method in behavioral Science, Aghah, Tehran.

[24] Hafeznia M.Z., 2008, An Introduction to the research method in humanities, Samt, Tehran.

[25] Patton M.Q., 2001, Qualitative Research & Evaluation Methods, Sage Publications, Inc.; 3rd edition.CA. US.

[26] Hwang C.L., 2003, Fuzzy Multiple Attribute Decision Making, Prince Hall.NY.US.
[27] Hwang C.L., & Yoon K., 1996, Multiple Attribute Decision Making; A State of The Art Survey, Auckland, Springer-Verlog.
[28] Simanaviciene R., Ustinovichius L., 2010, Sensitivity Analysis for Quantitative Decision Making Methods: TOPSIS and SAW, 16th International Conference on Information and Software Technologies, IT2010.
[29] Azar A., 2008, Fuzzy Management Science, IMPSC, Tehran
[30] Momeni M., 2007, New topic in operations research, University of Tehran, Tehran.
[31] Asgharpour M., 2009, Multiple criteria decision making, University of Tehran, Tehran.
[32] Aslani A., Aslani F., 2012, Application of Fuzzy AHP Approach to Selection of Organizational Structure with Consideration to Contextual Dimensions, Organizacija : Journal of Management, Informatics and Human Resources, in press.
[33] Aslani A., Helo P., Naaranoja M., 2012, Development of creativity in concurrent engineering teams, American Journal of Industrial and Business Management, Vol. 2(3): 77-84. DOI: 10.4236/ajibm.2012.23010
[34] Aslani A., Naaranoja M., Zakeri B., 2012. The prime criteria for private sector participation in renewable energy investment in the Middle East (case study: Iran). Renewable and Sustainable Energy Reviews, Volume 16(4): 1977–1987. DOI: 10.1016/j.rser.2011.12.015